IN THE CLAIMS:

Please cancel Claims 5 and 12 without prejudice to or disclaimer or the subject matter presented therein. Please amend Claims 1, 3, 7, 10, 11, 13 to 18, and 25 as shown below.

1. (Currently Amended) A semiconductor device in a printed board comprising:

an optical transmission region for transmitting a light signal;

a light emitting part; and

a light receiving part for converting the light signal propagating through the optical transmission region to an electrical signal,

wherein the optical transmission region comprises a two-dimensional optical waveguide layer capable of propagating the light signal in a plurality of directions, ~~and~~

wherein at least a portion of the light receiving part is embedded in the optical transmission region such that the light receiving part can receive the light signal propagating within a plane of the two-dimensional optical waveguide layer, and

wherein the at least a portion of the light receiving part has a spherical surface.

2. (Original) The semiconductor device according to claim 1, wherein an electric wiring layer is stacked on the optical transmission region.

3. (Currently Amended) The semiconductor device according to claim 1, wherein the at least a portion of the light receiving part is embedded in the optical transmission region such that the light receiving part can directly receive the light signal propagating through the two-dimensional optical waveguide layer.

4. (Cancelled)

5. (Cancelled)

6. (Original) The semiconductor device according to claim 1, wherein the light receiving part includes a spherical device.

7. (Currently Amended) The semiconductor device according to claim 1, wherein ~~a portion of a~~ the light emitting part is for transmitting the light signal to the optical transmission region, and wherein at least a portion of the light emitting part is embedded in the optical transmission region.

8. (Original) The semiconductor device according to claim 2, wherein the optical transmission region is interposed between the electric wiring layer located on the optical transmission region and another electric wiring layer located under the optical transmission region, and wherein at least a portion of the electric wiring layer is electrically

connected to at least a portion of the another electric wiring layer by a via hole for penetrating the optical transmission region.

9. (Original) The semiconductor device according to claim 2, wherein at least one of O/E conversion or E/O conversion between an electronic device provided on the electric wiring layer and the optical transmission region is performed using a spherical device.

10. (Currently Amended) An optoelectronic printed board comprising:

a substrate comprising at least ~~two layers consisting of~~ a first layer and a second layer, the first layer including an electronic device, an optical device, a light emitting device, and an electric wiring for coupling the electric device and the optical ~~devices~~ device, and the second layer including a two-dimensional optical waveguide capable of propagating a light signal in a plurality of directions,

wherein the optical device comprises a light receiving part for receiving the light signal waveguided through the two-dimensional optical waveguide, ~~and~~

wherein at least a portion of the light receiving part is embedded in the two-dimensional optical waveguide such that the light receiving part can receive the light signal propagating within a plane of the two-dimensional optical waveguide, and

wherein the light receiving part has a spherical structure, the light receiving part is mounted from a surface of the substrate such that the at least a portion of the light

receiving part is embedded in the two-dimensional optical waveguide, and the light receiving part is coupled, on the surface of the substrate, with the electric wiring.

11. (Currently Amended) The optoelectronic printed board according to claim 10, wherein the two-dimensional optical waveguide has a sheet-shaped form.

12. (Cancelled)

13. (Currently Amended) The optoelectronic printed board according to claim 10, wherein the optical device is provided with ~~a light receiving part and~~ an electric circuit for driving the light receiving part or amplifying an electric signal obtained.

14. (Currently Amended) The optoelectronic printed board according to claim 10, wherein a light source of the optical device has a spherical shape, the light source is mounted on the substrate from a surface ~~thereof~~ of the substrate such that at least a portion of the light source is embedded in the two-dimensional optical waveguide of the substrate, and the light source is coupled, on the surface of the substrate, with the electric wiring ~~on the surface of the substrate~~.

15. (Currently Amended) The optoelectronic printed board according to claim 10, the substrate further comprising: a transmission device for transmission having a spherical structure; and a parallel signal line, wherein an output terminal of the parallel

signal line is coupled with the transmission device for transmission, and wherein the transmission device for transmission conducts parallel/serial conversion and sends a serial optical signal to the two-dimensional optical waveguide.

16. (Currently Amended) The optoelectronic printed board according to claim 15, wherein the serial optical signal is received by the light receiving part ~~embedded in the two-dimensional optical waveguide~~, converted to an electric signal, subjected to serial/parallel conversion by an electronic circuit simultaneously formed on the light receiving part, and transmitted to the parallel signal line.

17. (Currently Amended) The optoelectronic printed board according to claim 10, wherein the optoelectronic printed board is made of a flexible substrate material.

18. (Currently Amended) An optoelectronic integrated circuit comprising:

an electronic device and optical device integrated on a surface of a spherical semiconductor substrate,

wherein the optical device is a light receiving element that includes a multi-layer film containing a pn junction, and

wherein the electronic device includes at least a bias circuit for applying a reverse bias to the light receiving element, and an amplifier for amplifying a signal obtained by converting a received light to an electric signal.

19. (Original) The optoelectronic integrated circuit according to claim 18, wherein at least a portion of the light receiving element is embedded in an optical transmission medium.

20. (Original) The optoelectronic integrated circuit according to claim 18, wherein the spherical semiconductor substrate is made of an Si single crystal.

21. (Original) The optoelectronic integrated circuit according to claim 18, wherein the spherical semiconductor substrate is made of a GaAs single crystal.

22. (Original) The optoelectronic integrated circuit according to claim 18, wherein the multi-layer film of the light receiving element is made of p-Si, i-Si and n-Si.

23. (Original) The optoelectronic integrated circuit according to claim 18, wherein the multi-layer film of the light receiving element is made of p-GaAs, GaAsN and n-GaAs.

24. (Original) A method of producing the optoelectronic integrated circuit according to claim 18, which comprises forming the multi-layer film of the light receiving element by ion implantation.

25. (Currently Amended) An optoelectronic integrated circuit comprising:

an electronic device and optical device integrated on a surface of a spherical semiconductor substrate,

wherein the optical device is a light emitting element that includes a multi-layer film containing a pn junction in a radial direction of the spherical semiconductor substrate, and

wherein the electronic device comprises a bias circuit that applies a forward bias to ~~said~~ the light emitting element.

26. (Original) The optoelectronic integrated circuit according to claim 25, wherein at least a portion of the light emitting element is embedded in an optical transmission medium.

27 to 35. (Cancelled)